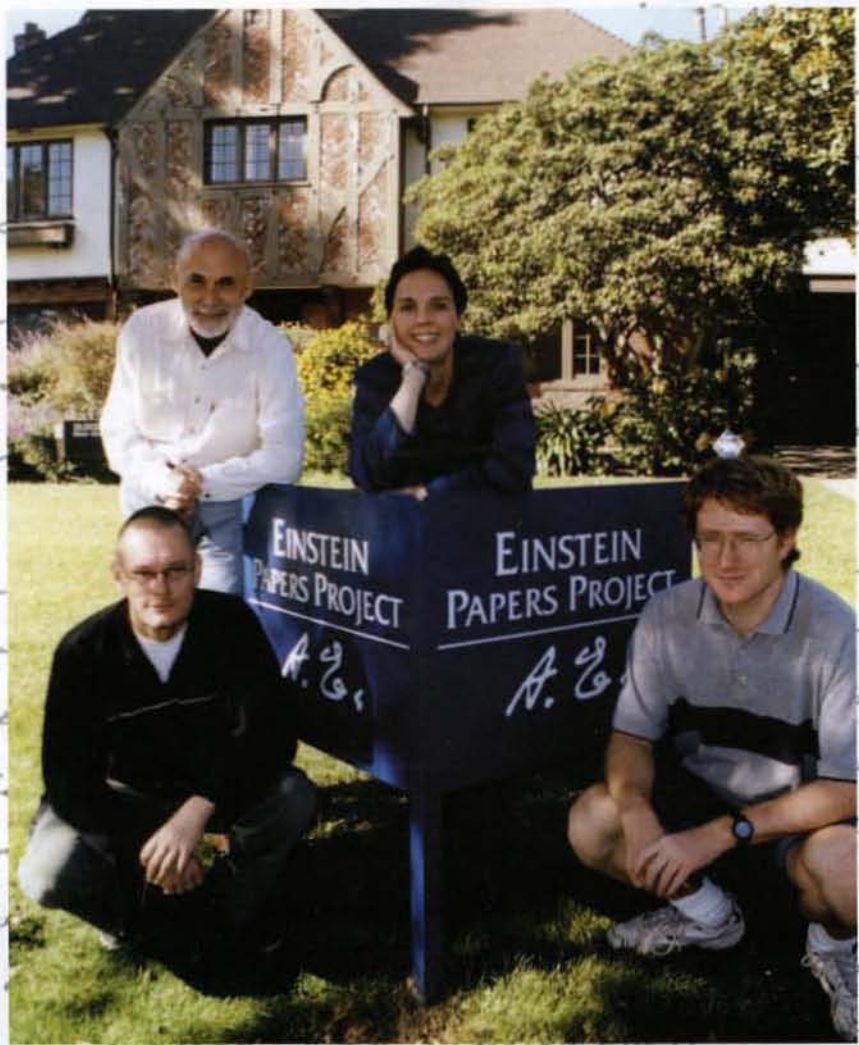


Liebe Lebauchs!

Nach
endlich ein
Mann. Diese
Kunig sieht
im dem von
eine ganz
nicht unwirg
Landschaft.
die südlichen
ich von der
ausgehend
u. s. w. Es gi
was dann
stadt im sp
Revolution,



ist heute
mal schreiben
den Zerköl-
ter Weise
es ist aber
ne hatte
und
ordentlich,
er hatte
ichtig was
sprechen
ünstern
te Tropen-
gerade
Kunig
hermaligen

nach unserer
Studien-Kollege vom Züricher Polytechnikum,
wurde bei dieser Gelegenheit abgesetzt. Hier
in Pasadena hat es Ähnlichkeit mit den Tropen.
Jahrts Sonne und klare Luft Gärten mit Palmen
und Pfefferbäumen und freundliche Leute, die
sich alle anliehen und um Autogramme bitten.
Wissenschaftlich ist es sehr interessant, und
die Kollegen sind wunderbar zu mir. Nicht aber

Einstein Redux

by Jane Dietrich

Left: Diana Barkan, director and general editor of the Einstein Papers Project, with three of the editors (counterclockwise from left, József Illy, Christoph Lehner, and David Kennefick) in front of the project's new home. They're superimposed over a letter Einstein wrote to family friends in Germany on January 16, 1931, during his first visit to Pasadena. Toward the bottom of the page he writes: "Here in Pasadena it is like Paradise. Always sunshine and clear air, gardens with palms and peppertrees and friendly people who smile at you and ask for autographs. Scientifically it is very interesting and my colleagues are wonderful to me." On the second page, though, he goes on to say how much he longs for Germany.

Right: Einstein and Millikan during the same visit.

Einstein has returned to Caltech. Not literally, but literarily.

Although the abundance of photographs of the great physicist on campus (see page 12) has left the impression that he was at some time a member of the Caltech faculty, he wasn't. Three sojourns of several months each as a visiting scientist occurred in 1931, 1932, and 1933, with Albert Einstein returning to Germany each time except the last—when he moved permanently to Princeton.

Why Princeton? Why not just stay at Caltech, where he found the science very exciting? It almost happened. In her 1991 book, *Millikan's School*, Archivist Judith Goodstein lays the failure to catch Einstein at Robert Millikan's parsimonious feet. She relates that, in 1931, Trustee Arthur Fleming had offered Einstein \$20,000 for a 10-week stay. The trustees agreed that they would have to back up this overly generous offer if Einstein indeed considered it a commitment, but they sent Millikan off to Berlin to sound out \$15,000 instead. Millikan eventually obtained Einstein's agreement to come for \$7,000, because Mrs. Einstein was eager to spend the winter in Southern California. "The penny-pinching Millikan had saved Caltech a tidy sum of money, and coincidentally lost a permanent faculty member," writes Goodstein.

A later article, "Albert Einstein at Caltech," by Abraham Hoffman, in the Winter 1997/98 issue of *California History*, paints Einstein as less greedy about his own salary and more anxious about a position for his assistant, Walther Mayer. According to Hoffman, Princeton's Abraham Flexner, director of the newly founded Institute for Advanced Study, put a full-court press on Einstein in 1932, offering a permanent position at the Institute and a place for Mayer. Millikan pleaded with Flexner to at least share Einstein with Caltech in a continuing visiting arrangement but came up with nothing for Mayer. Princeton said no to sharing. Einstein, knowing as he sat in Pasadena

in the winter of 1933 that he could no longer return to Germany, was concerned about the security of his future, and Princeton was clearly the better deal. Could Millikan have tried harder? Probably.

Now, nearly 70 years later, and 45 years after Einstein's death, Caltech has gotten another chance to do the right thing by offering generous support to the Einstein Papers Project. And Caltech and Princeton are again linked over Einstein, but in cooperation, not competition. The Einstein Papers Project is researching, selecting, editing, and annotating *The Collected Papers of Albert Einstein*, which is expected to run to 29 volumes containing 14,000 documents—the most ambitious publishing venture in the history of 20th-century science. The only thing comparable in scope, according to Associate Professor of History Diana Kormos Barkan, might be the 22 volumes



Photograph used with the kind permission of The Hebrew University of Jerusalem and The Roger Richman Agency, Inc.

of Christiaan Huygens' work, collected at the beginning of the 20th century by a group of Dutch scientists. Or Darwin's collected papers; but that publication (just his correspondence) is not as comprehensive as the Einstein project, which includes 40,000 documents from the original Einstein archive, as well as 15,000 more unearthed later by the project editors.

Barkan, a historian of science and a member of the Caltech faculty since 1989, was appointed director and general editor of the Einstein project last spring. (Her research interests include the modern history of the physical sciences and European intellectual history; her book, *Walther Nernst and the Transition to Modern Physical Science*, was reviewed in *E&S*, No. 1/2, 1999.) Barkan was also offered a faculty position at Boston University, where the collection had resided since 1984 in quasi exile from Princeton, more or less the result of historical accident. The question then arose whether Barkan would move to Boston to join the papers, or whether the papers might find a congenial home in Pasadena instead.

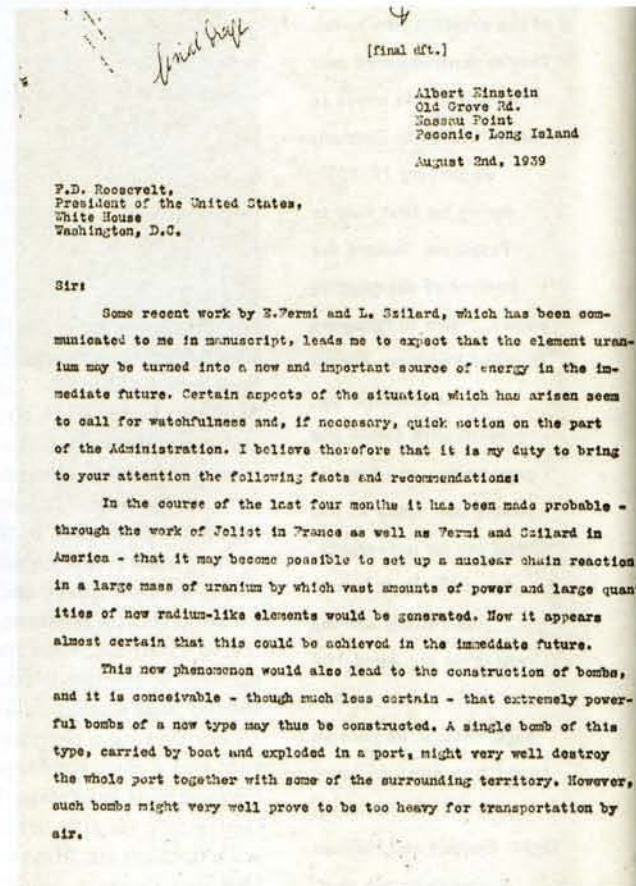
Caltech warmly embraced the idea of housing the project, as did Princeton University Press, the papers' publisher. The choice of Caltech was a good one, partly for historical and partly for sentimental reasons, according to Martin Klein, professor emeritus of physics and the history of science at Yale, and formerly a senior editor of the papers. Caltech has "genuine experts in general relativity in its post-Einsteinian development," says Klein.

President David Baltimore and Provost Steve Koonin greeted the prospect of housing the Einstein papers with more enthusiasm than Millikan had once proffered to the man himself. "Einstein had a very visible and productive relationship with this institution in the '30s," says Koonin. "It's exciting to have the papers here. In a sense, it's as if they've come home." This is particularly true, he adds, because some of the ongoing research here, such as the search for gravitational radiation in which Caltech has been a leader, has come out of work that Einstein began. "And it's a very nice way for the humanities and sciences to interact."

It also raises Caltech's profile in the history of science. "With the arrival on campus of the Einstein Papers Project, coupled with the hiring of Adrian Johns [associate professor of history] and Jed Buchwald [the Dreyfuss Professor of History], our small but powerful history of science group has confirmed it is one of the best in the world," claims John Ledyard, chair of the Division of the Humanities and Social Sciences. "This is as it should be at Caltech."

"Caltech is just a terrific place for the papers," says Walter Lippincott, director of Princeton University Press. "I'm thrilled that the project is housed at Caltech, because of the Einstein connection." (Einstein had no connection to Boston

The famous August 1939 letter below from Einstein to Roosevelt, urging him to support experiments in a nuclear chain reaction, has generally been considered the work of Leo Szilard. This and other documents in the Einstein papers show, however, that Szilard and Einstein were in close correspondence that summer and indeed composed the German text together (there were at least two drafts), which Szilard then translated into English. The correspondence also reveals that they considered asking Charles Lindbergh to be the bearer of the letter to the president, but changed their minds, probably upon hearing of Lindbergh's pro-German remarks. Banker Alexander Sachs finally carried the letter to FDR in mid-October, after Hitler had invaded Poland. The president reacted swiftly; the rest is history.



University.) A memorandum of understanding was signed with dispatch by the two institutions, and on June 8, the day before Caltech's Commencement, Lippincott and Princeton physicist Aaron Lemonick of the executive board of the Einstein Papers Project shook hands with Baltimore and Koonin on the transfer of the project to Caltech. It remains sponsored by the Hebrew University of Jerusalem and Princeton University Press, which will continue to publish the volumes.

An endowment, consisting of grants from individuals and foundations, including the National Science Foundation, the National Endowment for the Humanities, and the Alfred P. Sloan Foundation, has supported the Einstein Papers Project from early on. Caltech will be providing additional support as well as space.

On August 4, the Einstein papers, in seven large filing cabinets, moved into newly refurbished second-story offices (described by former editors familiar with previous quarters as "elegant" and "luxurious," although Barkan put much of the furniture together herself) in a house on Hill Avenue, next door to the Alumni House. It was once the home of the vice president for institute relations and, before that, the temporary home of then-President and Mrs. Tom Everhart. But it was determined at the last minute that the floor of the upstairs offices, originally designed to support



beds and chests of drawers, probably could not bear the burden of the filing cabinets, each the weight of a large grand piano. They were unceremoniously moved to the basement instead.

This was not as callous as it might appear: the seven filing cabinets contain photocopies, not originals. Since 1982, the originals have been housed at the Hebrew University of Jerusalem, the beneficiary of Einstein's literary estate (although the collection at Caltech is the more comprehensive, containing copies of thousands of documents in other private collections). After Einstein's death in Princeton in 1955, his friend Otto Nathan, executor and trustee of the estate, and co-trustee Helen Dukas, who had been Einstein's secretary since 1928, set about collecting all of his papers. Over the next 25 years they added substantially to the size of the existing archives. There was much interest at the time in publishing Einstein's scientific writings, but Nathan and Dukas insisted on the importance of publishing *all* of Einstein—including his letters, writings, and speeches on the philosophy of science, Zionism, pacifism, civil liberties, and other humanistic and social issues. In 1971 Princeton University Press agreed to take on the massive publishing project, which continued to be plagued by delays. John Stachel of Boston University was appointed the first general editor and moved to the Institute for Advanced Study in 1977, temporarily on leave from Boston. Disagreements between the press and the Einstein estate held up work and funding until the case was decided by arbitration in 1980, and Stachel was finally granted access to the papers.

By that time the project was housed in cramped quarters at Princeton University Press, and when Stachel decided to return in 1984 to Boston University, which was willing to grant office space, the massive photocopy collection was moved there. When Stachel left the project in 1988, it continued with Robert Schulmann and Jürgen Renn as

The Einstein papers arrived at Caltech in seven large filing cabinets (top left), each weighing 950 pounds. While the regular office files could be hoisted up the elegant staircase to the second-floor offices with little difficulty (top), the heavy files containing the heart of the project had to be lowered to the basement on an electric dolly.

-2-

The United States has only very poor ores of uranium in moderate quantities. There is some good ore in Canada and the former Czechoslovakia, while the most important source of uranium is Belgian Congo.

In view of this situation you may think it desirable to have some permanent contact maintained between the Administration and the group of physicists working on chain reactions in America. One possible way of achieving this might be for you to entrust with this task a person who has your confidence and who could perhaps serve in an unofficial capacity. His task might comprise the following:

a) to approach Government Departments, keep them informed of the further development, and put forward recommendations for Government action, giving particular attention to the problem of securing a supply of uranium ore for the United States;

b) to speed up the experimental work, which is at present being carried on within the limits of the budgets of University laboratories, by providing funds, if such funds be required, through his contacts with private persons who are willing to make contributions for this cause, and perhaps also by obtaining the co-operation of industrial laboratories which have the necessary equipment.

I understand that Germany has actually stopped the sale of uranium from the Czechoslovakian mines which she has taken over. That she should have taken such early action might perhaps be understood on the ground that the son of the German Under-Secretary of State, von Weiskopf, is attached to the Kaiser-Wilhelm-Institut in Berlin where some of the American work on uranium is now being repeated.

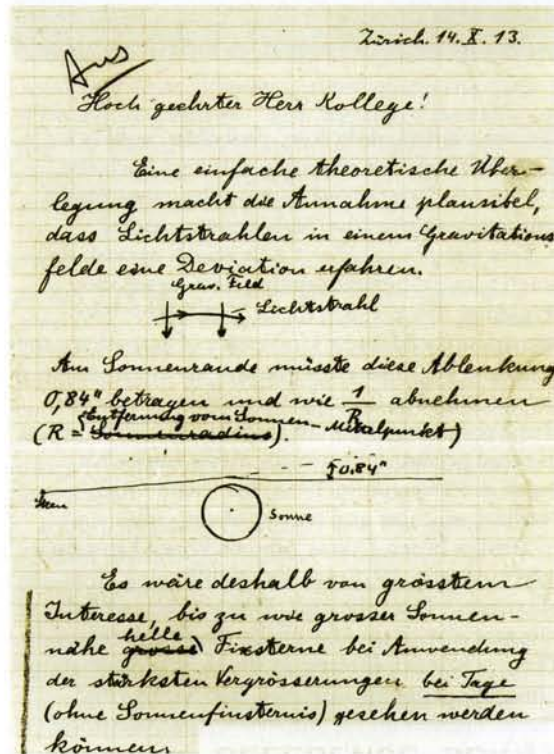
Yours very truly,

(Albert Einstein)

periods: the Swiss years (1900–1914), the Berlin years (1914–1933), and the Princeton years (1933–1955); these will all contain several volumes—11, for example, for the Berlin period. The volumes are divided into two series: “writings” (books, published and unpublished articles, lecture notes, research notebooks, book reviews, reliable records of speeches and interviews) and “correspondence” (letters written to and from Einstein, as well as selected third-party letters about him). This interleaving and cross-referencing of the writings and correspondence is one of the project’s unique features. The volumes are being published in chronological order.

Volume 2, *The Swiss Years: Writings, 1900–1909*, covers the first decade of Einstein’s career. His published scientific work at this time includes “some of the most significant achievements of 20th-century physics”—his seminal papers of 1905, the third of which set forth the special theory of relativity. By Volume 3, *The Swiss Years: Writings, 1909–1911*, Einstein has left the patent office and begun his academic career, first at the University of Zurich, then at the German University of Prague. Almost half of this book consists of previously unpublished notes for his lectures on mechanics, on electricity and magnetism, and on kinetic theory and statistical mechanics. The volume also documents his continuing interest in the problems of radiation and quantum theory and concludes with his report to the first Solvay Conference, the first international meeting devoted to these problems. The Swiss years end in Volume 4—*Writings, 1912–1914*—more than half of which traces his struggle to construct the general theory of relativity. It contains the first joint paper with Marcel Grossmann on general relativity, as well as an unpublished manuscript on relativity and electrodynamics, and the previously unknown Einstein-Besso calculations on the perihelion motion of Mercury. Volume 5, covering the whole Swiss period, contains the *Correspondence, 1902–1914*. Most of the 520 letters had not been published before and present a rich picture of Einstein in his 20s and early 30s in his relationship to his family, friends, and contemporaries in physics.

In 1914, Einstein moved to Berlin to join the Prussian Academy of Sciences. In Volume 6, *The Berlin Years: Writings 1914–1917*, he completes the general theory of relativity, returns to the puzzles of quantum theory, and, as World War I begins, publicly expresses his views on nonscientific subjects for the first time by signing a “Manifesto to Europeans,” urging unity and an end to hostilities. Volume 8, *The Berlin Years: Correspondence, 1914–1918*, is really two volumes, which comprise almost 700 letters, many of them only recently discovered by the editors. They cover his scientific discussions with colleagues, his sense of moral urgency about the war, and the breakup of his first marriage.



In another famous letter, this one to George Ellery Hale in 1913, Einstein suggests that starlight might bend in the presence of a gravitational field around the sun, a key ingredient in his general theory of relativity, which he was to complete in 1915. The original of this letter is not in the archive at the Hebrew University of Jerusalem; it never left the Pasadena area and resides with Hale’s papers in the Huntington Library in San Marino. (Used with the kind permission of the Huntington Library.)

coeditors (in Boston) and with Martin Klein as a senior editor in New Haven. When Klein retired, the decision was made to return to the original structure, with a director and general editor running the whole show, and Barkan was appointed to do just that.

Seven volumes appeared during the project’s Boston years, the first volume in 1987. Volume 1, *The Early Years (1879–1902)*, documents Einstein’s youth up until the time he began work for the Swiss patent office. About two-thirds of the 142 documents reproduced in the first volume were discovered by the project editors and had not been published previously. Among these were 52 letters exchanged with Mileva Maric, who would become Einstein’s first wife, letters that, since their publication, have spawned several books about Einstein’s love life.

The subsequent 28 volumes fall into three

Volume 7, *The Berlin Years: Writings, 1918–1921*, slightly out of order, will be the first book to appear from Caltech. Covering a particularly interesting period of Einstein's life, the book contains detailed annotations to his lectures and notes on the general theory of relativity. It was a time when he began to reexamine both the mathematics and the physics of his theory and to ponder its philosophical implications. Eddington's 1919 eclipse expedition confirmed Einstein's prediction that the sun's gravitational field would bend starlight. Einstein made his first trip to the U.S. in 1921—primarily to raise funds for the Hebrew University of Jerusalem with Chaim Weizmann, but he also gave a series of lectures on the theory of relativity, included in this volume, at Princeton.

One of the more interesting accounts in Volume 7, according to Barkan, is the growing anti-relativity movement among some scientists in Germany, the increasing anti-Semitic outbursts at the University of Berlin, and the complex relationship between the two. A number of documents pertain to Einstein's surprising skills on a wide range of patent disputes for which he served as an expert witness. "Throughout his life, he continued to derive great pleasure from examining devices and gadgets, especially electrical ones," says Barkan.

Editors of Volume 7 are Robert Schulmann, Michel Janssen, József Illy, and Christoph Lehner. Schulmann, now in Washington, D.C., has been with the project since 1981 and an editor on all the volumes; Janssen is assistant professor at the University of Minnesota; Illy, a visiting editor from Hungary, will now visit in Pasadena instead of Boston; and Lehner, senior assistant editor, moved with the papers from Boston to Pasadena quite literally—he packed them up on one end and unpacked them at the other. He will also hold the position of senior research fellow in the humanities at Caltech. Joining the staff as a

junior editor in January will be Daniel Kennefick, PhD '97, Caltech's first doctoral student in both physics and the history of science and winner of the Clauser Prize for the dissertation showing the most originality and ingenuity.

For those who are eager to follow Einstein's thought processes as he struggled with relativity, to read what he and H. A. Lorentz or Max Planck had to write to each other, or merely to romp through Albert and Mileva's love letters, be advised that everything is published in its original language, which is almost always, at least in the early volumes, German. The annotations and editorial commentaries are in English, however, and Princeton University Press has been publishing companion volumes with translations into English of all previously untranslated material. (And the Mileva letters have been translated and published in their own book.) The translation project is separately funded by the National Science Foundation and has remained at Princeton until now, but it too falls under Barkan's editorial responsibilities.

The filing cabinets on Hill Avenue are only for the use of the project staff, but a duplicate copy of the collection will be made available to scholars and researchers in the Caltech Archives. (Similar copies have been deposited in the project's former institutional homes, Princeton and Boston University, and at the Swiss Federal Institute of Technology, Einstein's alma mater.) The campus community also has the opportunity to attend four seminars on Einsteinian themes throughout the year. The first, "Lorentz vs. Einstein: The Special Theory of Relativity in Historical Context," was held on October 5 by A. J. Kox, the Pieter Zeeman Professor of History of Physics at the University of Amsterdam. Kox was also an editor of Volume 2 through Volume 8 of the collected papers.

Several members of the Caltech faculty will serve on an advisory committee to the general editor: Judith Goodstein, university archivist and faculty associate in history; Christopher Hitchcock, associate professor of philosophy; Mac Pigman, professor of literature; and Robbie Vogt, Avery Distinguished Service Professor and professor of physics. Representing Caltech on the advisory board to Princeton University Press is Kip Thorne, the Feynman Professor of Theoretical Physics.

Modest throughout his life, Einstein requested that his ashes be scattered in an unmarked spot. When the long-delayed volumes of his collected papers later began to appear, the *International Journal of Theoretical Physics* noted: "Einstein wished no monuments; this monument is the one he would have accepted . . ." □



Eight books of *The Collected Papers of Albert Einstein* have been published so far; actually Volume 7 is missing—but Volume 8 comes in two parts.

Below: In the papers' basement sanctuary, Barkan and Kennefick look over an interesting file with Susan Davis, division administrator for the humanities and social sciences, who was instrumental in the logistics of bringing the project to Caltech.

